D.Fitzgerald

#14
3F
6/20/00

1646

RAW SEQUENCE LISTING   DATE: 05/31/2000
PATENT APPLICATION: US/09/039,177A   TIME: 13:21:57

Input Set : A:\LUD5539.seq.txt
Output Set: N:\CRF3\05312000\I039177A.raw

ENTERED

RECEIVED
JUN 16 2000
TC 1600 MAIL ROOM

```
C--> 3  (1) GENERAL INFORMATION:
     5       (i) APPLICANT: MIYAZONO, Kohei
     6                      IMAMURA, Takeshe
     7                      TEN DIJKE, Peter
     9      (ii) TITLE OF INVENTION: PROTEINS HAVING SERINE/THREONINE
    10                      KINASE DOMAINS, CORRESPONDING NUCLEIC
    11                      ACID MOLECULES, AND THEIR USE
    13     (iii) NUMBER OF SEQUENCES: 29
    15      (iv) CORRESPONDENCE ADDRESS:
    16           (A) ADDRESSEE: Fulbright & Jaworski L.L.P.
    17           (B) STREET: 666 Fifth Avenue
    18           (C) CITY: New York City
    19           (D) STATE: New York
    20           (E) COUNTRY: USA
    21           (F) ZIP: 10103
C--> 23       (v) COMPUTER READABLE FORM:
    24           (A) MEDIUM TYPE: Diskette, 3.25 inch, 1.44mb
    25           (B) COMPUTER: IBM PS/2
    26           (C) OPERATING SYSTEM: PC-DOS
    27           (D) SOFTWARE: Wordperfect
C--> 29      (vi) CURRENT APPLICATION DATA:
C--> 30           (A) APPLICATION NUMBER: US/09/039,177A
C--> 31           (B) FILING DATE: 13-Mar-1998
    32           (C) CLASSIFICATION: 435
    67     (vii) PRIOR APPLICATION DATA:
    35           (A) APPLICATION NUMBER: 08/436,265
    36           (B) FILING DATE: October 30, 1995
    39           (A) APPLICATION NUMBER: PCT/GB93/02367
    40           (B) FILING DATE: November 17, 1993
    43           (A) APPLICATION NUMBER: GB 9224057.1
    44           (B) FILING DATE: November 17, 1992
    47           (A) APPLICATION NUMBER: GB 9304677.9
    48           (B) FILING DATE: March 8, 1993
    51           (A) APPLICATION NUMBER: GB 9304680.3
    52           (B) FILING DATE: March 8, 1993
    55           (A) APPLICATION NUMBER: 9311047.6
    56           (B) FILING DATE: May 28, 1993
    60           (A) APPLICATION NUMBER: 9313763.6
    61           (B) FILING DATE: July 2, 1993
    64           (A) APPLICATION NUMBER: 9136099.2
    65           (B) FILING DATE: August 3, 1993
    68           (A) APPLICATION NUMBER: 321344.5
    69           (B) FILING DATE: October 15, 1993
    71    (viii) ATTORNEY/AGENT INFORMATION:
    72           (A) NAME: Mary Anne Schofield
    73           (B) REGISTRATION NUMBER: 36,669
    74           (C) REFERENCE/DOCKET NUMBER: LUD 5539 - JEL/MAS
```

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RAW SEQUENCE LISTING                    DATE: 05/31/2000
PATENT APPLICATION:   US/09/039,177A    TIME: 13:21:57

     Input Set : A:\LUD5539.seq.txt
     Output Set: N:\CRF3\05312000\I039177A.raw

 76   (ix) TELECOMMUNICATION INFORMATION:
 77        (A) TELEPHONE: (212) 318-3000
 78        (B) TELEFAX: (212) 752-5958
 82 (2) INFORMATION FOR SEQ ID NO: 1:
 83      (i) SEQUENCE CHARACTERISTICS:
 84          (A) LENGTH: 1984 base pairs
 85          (B) TYPE: nucleic acid
 86          (C) STRANDEDNESS: unknown
 87          (D) TOPOLOGY: linear
 89     (ii) MOLECULE TYPE: cDNA
 91    (iii) HYPOTHETICAL: NO
 93     (iv) ANTI-SENSE: NO
 95      (v) FRAGMENT TYPE: internal
 97     (vi) ORIGINAL SOURCE:
 98          (A) ORGANISM: Homo sapiens
100     (ix) FEATURE:
101          (A) NAME/KEY: CDS
102          (B) LOCATION: 283..1791
104     (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 1:
106 AGGAAACGGT TTATTAGGAG GGAGTGGTGG AGCTGGGCCA GGCAGGAAGA CGCTGGAATA       60
108 AGAAACATTT TTGCTCCAGC CCCCATCCCA GTCCCGGGAG GCTGCCGCGC CAGCTGCGCC      120
110 GAGCGAGCCC CTCCCCGGCT CCAGCCCGGT CCGGGGCCGC GCCGGACCCC AGCCCGCCGT      180
112 CCAGCGCTGG CGGTGCAACT GCGGCCGCGC GGTGGAGGGG AGGTGGCCCC GGTCCGCCGA      240
114 AGGCTAGCGC CCCGCCACCC GCAGAGCGGG CCCAGAGGGA CC ATG ACC TTG GGC         294
115                                              Met Thr Leu Gly
116                                               1
118 TCC CCC AGG AAA GGC CTT CTG ATG CTG CTG ATG GCC TTG GTG ACC CAG       342
119 Ser Pro Arg Lys Gly Leu Leu Met Leu Leu Met Ala Leu Val Thr Gln
120  5                  10                  15                  20
122 GGA GAC CCT GTG AAG CCG TCT CGG GGC CCG CTG GTG ACC TGC ACG TGT       390
123 Gly Asp Pro Val Lys Pro Ser Arg Gly Pro Leu Val Thr Cys Thr Cys
124              25                  30                  35
126 GAG AGC CCA CAT TGC AAG GGG CCT ACC TGC CGG GGG GCC TGG TGC ACA       438
127 Glu Ser Pro His Cys Lys Gly Pro Thr Cys Arg Gly Ala Trp Cys Thr
128              40                  45                  50
130 GTA GTG CTG GTG CGG GAG GAG GGG AGG CAC CCC CAG GAA CAT CGG GGC       486
131 Val Val Leu Val Arg Glu Glu Gly Arg His Pro Gln Glu His Arg Gly
132          55                  60                  65
134 TGC GGG AAC TTG CAC AGG GAG CTC TGC AGG GGG CGC CCC ACC GAG TTC       534
135 Cys Gly Asn Leu His Arg Glu Leu Cys Arg Gly Arg Pro Thr Glu Phe
136      70                  75                  80
138 GTC AAC CAC TAC TGC TGC GAC AGC CAC CTC TGC AAC CAC AAC GTG TCC       582
139 Val Asn His Tyr Cys Cys Asp Ser His Leu Cys Asn His Asn Val Ser
140  85                  90                  95                 100
142 CTG GTG CTG GAG GCC ACC CAA CCT CCT TCG GAG CAG CCG GGA ACA GAT       630
143 Leu Val Leu Glu Ala Thr Gln Pro Pro Ser Glu Gln Pro Gly Thr Asp
144             105                 110                 115
146 GGC CAG CTG GCC CTG ATC CTG GGC CCC GTG CTG GCC TTG CTG GCC CTG       678
147 Gly Gln Leu Ala Leu Ile Leu Gly Pro Val Leu Ala Leu Leu Ala Leu
```

C--> (next to line 93)

RAW SEQUENCE LISTING   DATE: 05/31/2000
PATENT APPLICATION: US/09/039,177A   TIME: 13:21:57

Input Set : A:\LUD5539.seq.txt
Output Set: N:\CRF3\05312000\I039177A.raw

```
148                120                 125                 130
150 GTG GCC CTG GGT GTC CTG GGC CTG TGG CAT GTC CGA CGG AGG CAG GAG          726
151 Val Ala Leu Gly Val Leu Gly Leu Trp His Val Arg Arg Arg Gln Glu
152         135                 140                 145
154 AAG CAG CGT GGC CTG CAC AGC GAG CTG GGA GAG TCC AGT CTC ATC CTG          774
155 Lys Gln Arg Gly Leu His Ser Glu Leu Gly Glu Ser Ser Leu Ile Leu
156      150                 155                 160
158 AAA GCA TCT GAG CAG GGC GAC ACG ATG TTG GGG GAC CTC CTG GAC AGT          822
159 Lys Ala Ser Glu Gln Gly Asp Thr Met Leu Gly Asp Leu Leu Asp Ser
160 165                 170                 175                 180
162 GAC TGC ACC ACA GGG AGT GGC TCA GGG CTC CCC TTC CTG GTG CAG AGG          870
163 Asp Cys Thr Thr Gly Ser Gly Ser Gly Leu Pro Phe Leu Val Gln Arg
164                 185                 190                 195
166 ACA GTG GCA CGG CAG GTT GCC TTG GTG GAG TGT GTG GGA AAA GGC CGC          918
167 Thr Val Ala Arg Gln Val Ala Leu Val Glu Cys Val Gly Lys Gly Arg
168                 200                 205                 210
170 TAT GGC GAA GTG TGG CGG GGC TTG TGG CAC GGT GAG AGT GTG GCC GTC          966
171 Tyr Gly Glu Val Trp Arg Gly Leu Trp His Gly Glu Ser Val Ala Val
172         215                 220                 225
174 AAG ATC TTC TCC TCG AGG GAT GAA CAG TCC TGG TTC CGG GAG ACT GAG         1014
175 Lys Ile Phe Ser Ser Arg Asp Glu Gln Ser Trp Phe Arg Glu Thr Glu
176         230                 235                 240
178 ATC TAT AAC ACA GTA TTG CTC AGA CAC GAC AAC ATC CTA GGC TTC ATC         1062
179 Ile Tyr Asn Thr Val Leu Leu Arg His Asp Asn Ile Leu Gly Phe Ile
180 245                 250                 255                 260
182 GCC TCA GAC ATG ACC TCC CGC AAC TCG AGC ACG CAG CTG TGG CTC ATC         1110
183 Ala Ser Asp Met Thr Ser Arg Asn Ser Ser Thr Gln Leu Trp Leu Ile
184                 265                 270                 275
186 ACG CAC TAC CAC GAG CAC GGC TCC CTC TAC GAC TTT CTG CAG AGA CAG         1158
187 Thr His Tyr His Glu His Gly Ser Leu Tyr Asp Phe Leu Gln Arg Gln
188                 280                 285                 290
190 ACG CTG GAG CCC CAT CTG GCT CTG AGG CTA GCT GTG TCC GCG GCA TGC         1206
191 Thr Leu Glu Pro His Leu Ala Leu Arg Leu Ala Val Ser Ala Ala Cys
192         295                 300                 305
194 GGC CTG GCG CAC CTG CAC GTG GAG ATC TTC GGT ACA CAG GGC AAA CCA         1254
195 Gly Leu Ala His Leu His Val Glu Ile Phe Gly Thr Gln Gly Lys Pro
196      310                 315                 320
198 GCC ATT GCC CAC CGC GAC TTC AAG AGC CGC AAT GTG CTG GTC AAG AGC         1302
199 Ala Ile Ala His Arg Asp Phe Lys Ser Arg Asn Val Leu Val Lys Ser
200 325                 330                 335                 340
202 AAC CTG CAG TGT TGC ATC GCC GAC CTG GGC CTG GCT GTG ATG CAC TCA         1350
203 Asn Leu Gln Cys Cys Ile Ala Asp Leu Gly Leu Ala Val Met His Ser
204                 345                 350                 355
206 CAG GGC AGC GAT TAC CTG GAC ATC GGC AAC AAC CCG AGA GTG GGC ACC         1398
207 Gln Gly Ser Asp Tyr Leu Asp Ile Gly Asn Asn Pro Arg Val Gly Thr
208                 360                 365                 370
210 AAG CGG TAC ATG GCA CCC GAG GTG CTG GAC GAG CAG ATC CGC ACG GAC         1446
211 Lys Arg Tyr Met Ala Pro Glu Val Leu Asp Glu Gln Ile Arg Thr Asp
212         375                 380                 385
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RAW SEQUENCE LISTING   DATE: 05/31/2000
PATENT APPLICATION: US/09/039,177A   TIME: 13:21:57

Input Set : A:\LUD5539.seq.txt
Output Set: N:\CRF3\05312000\I039177A.raw

```
214 TGC TTT GAG TCC TAC AAG TGG ACT GAC ATC TGG GCC TTT GGC CTG GTG      1494
215 Cys Phe Glu Ser Tyr Lys Trp Thr Asp Ile Trp Ala Phe Gly Leu Val
216     390             395             400
218 CTG TGG GAG ATT GCC CGC CGG ACC ATC GTG AAT GGC ATC GTG GAG GAC      1542
219 Leu Trp Glu Ile Ala Arg Arg Thr Ile Val Asn Gly Ile Val Glu Asp
220 405             410             415             420
222 TAT AGA CCA CCC TTC TAT GAT GTG GTG CCC AAT GAC CCC AGC TTT GAG      1590
223 Tyr Arg Pro Pro Phe Tyr Asp Val Val Pro Asn Asp Pro Ser Phe Glu
224             425             430             435
226 GAC ATG AAG AAG GTG GTG TGT GTG GAT CAG CAG ACC CCC ACC ATC CCT      1638
227 Asp Met Lys Lys Val Val Cys Val Asp Gln Gln Thr Pro Thr Ile Pro
228             440             445             450
230 AAC CGG CTG GCT GCA GAC CCG GTC CTC TCA GGC CTA GCT CAG ATG ATG      1686
231 Asn Arg Leu Ala Ala Asp Pro Val Leu Ser Gly Leu Ala Gln Met Met
232         455             460             465
234 CGG GAG TGC TGG TAC CCA AAC CCC TCT GCC CGA CTC ACC GCG CTG CGG      1734
235 Arg Glu Cys Trp Tyr Pro Asn Pro Ser Ala Arg Leu Thr Ala Leu Arg
236     470             475             480
238 ATC AAG AAG ACA CTA CAA AAA ATT AGC AAC AGT CCA GAG AAG CCT AAA      1782
239 Ile Lys Lys Thr Leu Gln Lys Ile Ser Asn Ser Pro Glu Lys Pro Lys
240 485                 490                 495                 500
242 GTG ATT CAA TAGCCCAGGA GCACCTGATT CCTTTCTGCC TGCAGGGGGC            1831
243 Val Ile Gln
245 TGGGGGGGTG GGGGGCAGTG GATGGTGCCC TATCTGGGTA GAGGTAGTGT GAGTGTGGTG   1891
247 TGTGCTGGGG ATGGGCAGCT GCGCCTGCCT GCTCGGCCCC CAGCCCACCC AGCCAAAAAT   1951
249 ACAGCTGGGC TGAAACCTGA AAAAAAAAAA AAA                               1984
252 (2) INFORMATION FOR SEQ ID NO: 2:
253     (i) SEQUENCE CHARACTERISTICS:
254         (A) LENGTH: 503 amino acids
255         (B) TYPE: amino acid
256         (D) TOPOLOGY: linear
258    (ii) MOLECULE TYPE: protein
260    (xi) SEQUENCE DESCRIPTION: SEQ ID NO: 2:
262 Met Thr Leu Gly Ser Pro Arg Lys Gly Leu Leu Met Leu Leu Met Ala
263  1               5                   10                  15
265 Leu Val Thr Gln Gly Asp Pro Val Lys Pro Ser Arg Gly Pro Leu Val
266             20                  25                  30
268 Thr Cys Thr Cys Glu Ser Pro His Cys Lys Gly Pro Thr Cys Arg Gly
269         35                  40                  45
271 Ala Trp Cys Thr Val Val Leu Val Arg Glu Glu Gly Arg His Pro Gln
272     50                  55                  60
274 Glu His Arg Gly Cys Gly Asn Leu His Arg Glu Leu Cys Arg Gly Arg
275  65                 70                  75                  80
277 Pro Thr Glu Phe Val Asn His Tyr Cys Cys Asp Ser His Leu Cys Asn
278             85                  90                  95
280 His Asn Val Ser Leu Val Leu Glu Ala Thr Gln Pro Pro Ser Glu Gln
281             100                 105                 110
283 Pro Gly Thr Asp Gly Gln Leu Ala Leu Ile Leu Gly Pro Val Leu Ala
284     115                 120                 125
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RAW SEQUENCE LISTING   DATE: 05/31/2000
PATENT APPLICATION: US/09/039,177A   TIME: 13:21:57

Input Set : A:\LUD5539.seq.txt
Output Set: N:\CRF3\05312000\I039177A.raw

```
286 Leu Leu Ala Leu Val Ala Leu Gly Val Leu Gly Leu Trp His Val Arg
287     130                 135                 140
289 Arg Arg Gln Glu Lys Gln Arg Gly Leu His Ser Glu Leu Gly Glu Ser
290 145                 150                 155                 160
292 Ser Leu Ile Leu Lys Ala Ser Glu Gln Gly Asp Thr Met Leu Gly Asp
293             165                 170                 175
295 Leu Leu Asp Ser Asp Cys Thr Thr Gly Ser Gly Ser Gly Leu Pro Phe
296             180                 185                 190
298 Leu Val Gln Arg Thr Val Ala Arg Gln Val Ala Leu Val Glu Cys Val
299         195                 200                 205
301 Gly Lys Gly Arg Tyr Gly Glu Val Trp Arg Gly Leu Trp His Gly Glu
302     210                 215                 220
304 Ser Val Ala Val Lys Ile Phe Ser Ser Arg Asp Glu Gln Ser Trp Phe
305 225             230                 235                 240
307 Arg Glu Thr Glu Ile Tyr Asn Thr Val Leu Leu Arg His Asp Asn Ile
308             245                 250                 255
310 Leu Gly Phe Ile Ala Ser Asp Met Thr Ser Arg Asn Ser Ser Thr Gln
311             260                 265                 270
313 Leu Trp Leu Ile Thr His Tyr His Glu His Gly Ser Leu Tyr Asp Phe
314     275                 280                 285
316 Leu Gln Arg Gln Thr Leu Glu Pro His Leu Ala Leu Arg Leu Ala Val
317     290                 295                 300
319 Ser Ala Ala Cys Gly Leu Ala His Leu His Val Glu Ile Phe Gly Thr
320 305             310                 315                 320
322 Gln Gly Lys Pro Ala Ile Ala His Arg Asp Phe Lys Ser Arg Asn Val
323             325                 330                 335
325 Leu Val Lys Ser Asn Leu Gln Cys Cys Ile Ala Asp Leu Gly Leu Ala
326         340                 345                 350
328 Val Met His Ser Gln Gly Ser Asp Tyr Leu Asp Ile Gly Asn Asn Pro
329         355                 360                 365
331 Arg Val Gly Thr Lys Arg Tyr Met Ala Pro Glu Val Leu Asp Glu Gln
332     370                 375                 380
334 Ile Arg Thr Asp Cys Phe Glu Ser Tyr Lys Trp Thr Asp Ile Trp Ala
335 385             390                 395                 400
337 Phe Gly Leu Val Leu Trp Glu Ile Ala Arg Arg Thr Ile Val Asn Gly
338             405                 410                 415
340 Ile Val Glu Asp Tyr Arg Pro Pro Phe Tyr Asp Val Val Pro Asn Asp
341         420                 425                 430
343 Pro Ser Phe Glu Asp Met Lys Lys Val Val Cys Val Asp Gln Gln Thr
344         435                 440                 445
346 Pro Thr Ile Pro Asn Arg Leu Ala Ala Asp Pro Val Leu Ser Gly Leu
347     450                 455                 460
349 Ala Gln Met Met Arg Glu Cys Trp Tyr Pro Asn Pro Ser Ala Arg Leu
350 465             470                 475                 480
352 Thr Ala Leu Arg Ile Lys Lys Thr Leu Gln Lys Ile Ser Asn Ser Pro
353             485                 490                 495
355 Glu Lys Pro Lys Val Ile Gln
356             500
359 (2) INFORMATION FOR SEQ ID NO: 3:
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VERIFICATION SUMMARY   DATE: 05/31/2000
PATENT APPLICATION: US/09/039,177A   TIME: 13:21:58

Input Set : A:\LUD5539.seq.txt
Output Set: N:\CRF3\05312000\I039177A.raw

```
L:3 M:220 C: Keyword misspelled or invalid format, [(1) GENERAL INFORMATION:]
L:23 M:220 C: Keyword misspelled or invalid format, [(v) COMPUTER READABLE FORM:]
L:93 M:220 C: Keyword misspelled or invalid format, [(iv) ANTI-SENSE:]
L:370 M:220 C: Keyword misspelled or invalid format, [(iv) ANTI-SENSE:]
L:674 M:220 C: Keyword misspelled or invalid format, [(iv) ANTI-SENSE:]
L:993 M:220 C: Keyword misspelled or invalid format, [(iv) ANTI-SENSE:]
L:1282 M:220 C: Keyword misspelled or invalid format, [(iv) ANTI-SENSE:]
L:1569 M:220 C: Keyword misspelled or invalid format, [(iv) ANTI-SENSE:]
L:1844 M:220 C: Keyword misspelled or invalid format, [(iv) ANTI-SENSE:]
L:2135 M:220 C: Keyword misspelled or invalid format, [(iv) ANTI-SENSE:]
L:2418 M:220 C: Keyword misspelled or invalid format, [(iv) ANTI-SENSE:]
L:2693 M:220 C: Keyword misspelled or invalid format, [(iv) ANTI-SENSE:]
L:2711 M:220 C: Keyword misspelled or invalid format, [(iv) ANTI-SENSE:]
L:2729 M:220 C: Keyword misspelled or invalid format, [(iv) ANTI-SENSE:]
L:2747 M:220 C: Keyword misspelled or invalid format, [(iv) ANTI-SENSE:]
L:2765 M:220 C: Keyword misspelled or invalid format, [(iv) ANTI-SENSE:]
L:2783 M:220 C: Keyword misspelled or invalid format, [(iv) ANTI-SENSE:]
L:2801 M:220 C: Keyword misspelled or invalid format, [(iv) ANTI-SENSE:]
L:2820 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:26
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